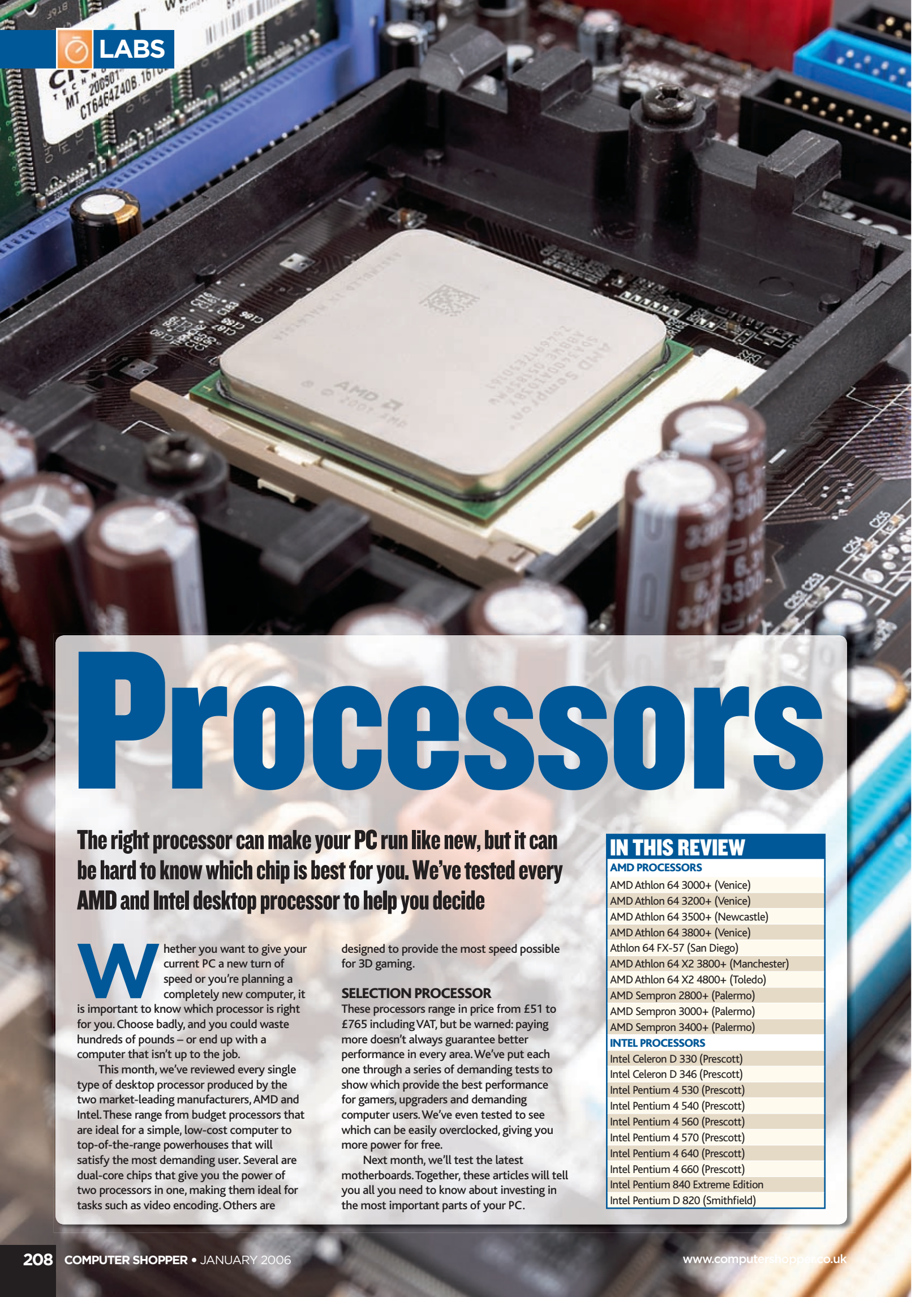




Processors

The right processor can make your PC run like new, but it can be hard to know which chip is best for you. We've tested every AMD and Intel desktop processor to help you decide

Whether you want to give your current PC a new turn of speed or you're planning a completely new computer, it is important to know which processor is right for you. Choose badly, and you could waste hundreds of pounds – or end up with a computer that isn't up to the job.

This month, we've reviewed every single type of desktop processor produced by the two market-leading manufacturers, AMD and Intel. These range from budget processors that are ideal for a simple, low-cost computer to top-of-the-range powerhouses that will satisfy the most demanding user. Several are dual-core chips that give you the power of two processors in one, making them ideal for tasks such as video encoding. Others are

designed to provide the most speed possible for 3D gaming.

SELECTION PROCESSOR

These processors range in price from £51 to £765 including VAT, but be warned: paying more doesn't always guarantee better performance in every area. We've put each one through a series of demanding tests to show which provide the best performance for gamers, upgraders and demanding computer users. We've even tested to see which can be easily overclocked, giving you more power for free.

Next month, we'll test the latest motherboards. Together, these articles will tell you all you need to know about investing in the most important parts of your PC.

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AMD PROCESSORS

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AMD Athlon 64 3200+ (Venice)
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AMD Athlon 64 3800+ (Venice)
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AMD Athlon 64 X2 3800+ (Manchester)
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CHOOSING A... PROCESSOR

If all the different kinds of chips isn't enough to confuse you, there are also considerations such as sockets, cores and clock speeds to think about. But don't clutch your head in despair – this guide will help

Many people believe that choosing the most expensive processor or the one with the highest clock speed will give the best performance. That isn't the case. Certain processors are better at specific tasks than others. Other factors, such as the number of cores and instruction sets supported, make a big difference. To complicate matters further, not all processors are compatible with all motherboards or chipsets.

SOCKET TO 'EM

As processors change, so do the ways in which they connect to the motherboard. If you're upgrading, check our 'What upgrade can I fit?' table below to see which processors will fit in your existing socket. Intel's Socket 478 and AMD's Socket A are now obsolete, so if you have one of these you'll need to add a new motherboard, too. Look out for our motherboard review in next month's *Labs*.

If you're adding a new processor to your old motherboard, it's important to update the motherboard's BIOS. Socket 754 motherboards usually need a BIOS update to recognise Sempron processors, and Socket 939 motherboards need updating to recognise an Athlon 64 X2. To find the latest BIOS for your motherboard, visit the manufacturer's website. If you're replacing a Pentium 4 or Celeron processor with a Pentium D, make sure your motherboard chipset supports a dual-core chip; Intel's 915 and 925 chipsets don't.

MISLEADING MEGAHERTZ

It's important to know that higher clock speeds do not necessarily equate to faster performance.

AMD's Athlon 64 3800+ has a clock speed of just 2.4GHz, but our tests show that it is just as fast as a 3.2GHz Pentium 4 in most tasks. For this reason, AMD and Intel have stopped using clock speed to refer to processor models. Intel chips are given a three-digit number. The first digit indicates the processor family, with the next two indicating its speed and features. AMD uses a four-digit number to indicate the relative speed of each chip, so an Athlon 64 4000+ is faster than an Athlon 64 3200+.

A processor's performance is also dependent on which instruction sets it supports and whether it has more than one core. All AMD Athlon 64 processors and the Sempron 3400+, as well as some Intel Pentium 4 chips, have 64-bit instruction sets. These affect performance in Windows XP Professional x64 and future applications written to use 64-bit processing. Most modern processors support SSE3 instructions, which accelerate tasks such as video encoding in some software.

Dual-core processors are, in effect, two chips in one. They can almost double the speed of a PC when running applications that use both cores at once, such as our video-encoding benchmark, but they have no effect on games or other single-processor applications. Intel's Hyper-Threading allows a single-core processor to alternate between two sets of tasks easily, producing a smaller speed increase in some applications.

SOMETHING FOR NOTHING

It's not often you can get something for nothing, but certain processors allow you to get more speed for free by overclocking. This involves adjusting your

HOW WE TESTED

We put each one of our processors through a set of demanding benchmark tests to assess their performance. To test performance in Windows applications, we used Futuremark's PCMark04 and our *Shopper* benchmark suite; for more details, see page 212. To assess how well they perform in modern 3D games, we tested each one using Ubisoft's demanding *Far Cry* with the screen resolution set at 1,024x768 at maximum detail.

To make the tests as fair as possible, our three test computers used near-identical components. Each one had a 256MB Sapphire ATI Radeon X700 graphics card and 1GB of memory. We used the same 160GB Maxtor SATA hard disk and DVD-ROM drive in each PC.

computer's BIOS to run the processor at a faster clock speed. For example, you could use a processor designed to run at 2GHz and run it at the same speed as a more expensive 2.2GHz chip.

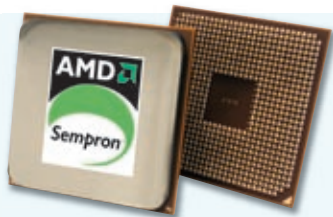
This process must be undertaken carefully, as too much speed with inadequate cooling can cook your expensive processor. If done correctly, though, you get a faster processor for no extra cost. Our reviews explain which processors can be safely overclocked. Bear in mind that you'll need a decent processor cooler and patience to get similar results.

WHAT UPGRADE CAN I FIT?

								
	AMD SEMPRON	AMD ATHLON 64	AMD ATHLON 64 X2	AMD ATHLON 64 FX	INTEL CELERON D	INTEL PENTIUM 4 500	INTEL PENTIUM 4 600	INTEL PENTIUM D / EXTREME EDITION
SOCKET 754	Yes	No	No	No	No	No	No	No
SOCKET 939	No	Yes	Yes	Yes	No	No	No	No
SOCKET 775	No	No	No	No	Yes	Yes	Yes	Depends on chipset



REVIEW AMD PROCESSOR

AMD
SempronDETAILS www.amd.com/sempron

AMD introduced the Sempron range of budget processors in 2004. We tested the Sempron 2800+, 3000+ and 3400+, which all use Socket 754. These are based on the Palermo core. Palermo uses the same 90nm process as the Athlon 64 Venice and supports the latest SSE3 instruction set.

The first Socket 754 Semprons didn't support the x86-64 64-bit instruction set, so they were incompatible with the 64-bit version of Windows XP Professional. However, in June 2005, AMD decided to sell Sempron processors with 64-bit extensions. Semprons may not have the raw power of the Athlon 64 processors, but they provide 64-bit computing at a low price.

Our test results showed that a system based on a Sempron processor is fine for normal office tasks, but struggles with advanced applications such as video editing and gaming. Even the fastest Sempron in the group, the £95 3400+, couldn't match Intel's £54 Celeron D 330 in our video-encoding test. It scored 73, some way behind the Celeron's 86.

We managed to overclock the 3400+ to 2.3GHz, however, where it managed scores of 4,244 in PCMark04 and 103 in our video-encoding test. This was faster than the Athlon 64 3500+, which costs £85 more.

VERDICT

AMD's Sempron processors are cheap and powerful enough to use in a simple office workstation. The 3400+ is a great choice for overclockers on a tight budget. If you're building a new PC, though, Intel's Celeron D range is more powerful and just as cheap.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Sempron 2800+ (Palermo)	754	1.6GHz	8x	128KB + 256KB
Sempron 3000+ (Palermo)		1.8GHz	9x	128KB + 128KB
Sempron 3400+ (Palermo)		2GHz	10x	128KB + 256KB

REVIEW AMD PROCESSOR

AMD
Athlon 64 X2DETAILS www.amd.com/athlon64

The Athlon 64 X2 range of dual-core 64-bit processors competes with Intel's Pentium D range. Athlon 64 X2 processors fit into Socket 939 motherboards, but you may have to update your motherboard BIOS to upgrade from an Athlon 64 to Athlon 64 X2. We tested the cheapest X2, the 3800+, and the fastest, the 4800+.

Applications that can use both cores at once, such as our video-encoding benchmark, ran extremely fast. The 3800+, with two 2GHz cores, scored 179 in our video test. The Athlon 64 3000+, with a single 2GHz core, scored just 84. The X2 3800+ even outpaced the £700 FX-57 in the PCMark and Shopper video tests.

The 4800+'s scores were astonishing. Its score of 208 in our video test is one of the highest scores we've ever seen. It couldn't quite match the FX-57 in Far Cry, but it was only 1.19fps slower despite costing £143 less. Overclockers should save some money and buy the 3800+, though. It overclocked to 2.1GHz, producing an impressive score of 197 in our video test.

VERDICT

The Athlon 64 X2 3800+ costs only £16 more than the Athlon 64 3800+, but is far faster in almost all our tests. If you're building a dual-core PC from scratch, Intel's Pentium D 820 is better value. However, the X2 3800+ is a great upgrade if you have a Socket 939 motherboard. The X2 4800+ is incredibly powerful, but too expensive.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Athlon 64 X2 3800+ (Manchester)	939	2GHz	10x	128KB + 512KB
Athlon 64 X2 4800+ (Toledo)		2.4GHz	12x	128KB + 1,024KB

REVIEW AMD PROCESSOR

AMD
Athlon 64DETAILS www.amd.com/athlon64

Intel launched its 64-bit processors in 2005, but AMD has been trumpeting 64-bit computing since 2003. With or without Windows XP Professional x64, Athlon 64 processors are powerful and relatively cheap.

AMD is well known for changing processor cores on a regular basis. We tested the Athlon 64 3000+, 3200+ and 3800+ made using the latest Venice core, and a 3500+ using the older Newcastle core for comparison. The chief advantages of the Venice core are a more efficient 90nm process and the addition of the SSE3 instruction set. Our tests revealed the disadvantage of the older core. The Newcastle 3500+ was closer in performance to the Venice 3200+ than to the 3800+ so, unless you find a Newcastle processor on sale for a low price, we recommend you get a Venice chip.

AMD's processors are easy to overclock. Even using the standard AMD cooler, we managed to overclock the £129 Athlon 64 3200+ from 2GHz to 2.3GHz, giving it performance on a par with the £234 Athlon 64 3800+. It scored 94 in our video-editing test before overclocking and 108 afterwards.

VERDICT

Athlon 64 processors are still a good choice for a gaming PC; a £130 Athlon 64 3200+ will run Far Cry at just under 50fps. The 3200+ is also a great chip for overclockers. If your interests extend to other tasks such as video encoding, though, Intel's Pentium 4 processors are better.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Athlon 64 3000+ (Venice)	939	1.8GHz	9x	128KB + 512KB
Athlon 64 3200+ (Venice)		2GHz	10x	
Athlon 64 3500+ (Newcastle)		2.2GHz	11x	
Athlon 64 3800+ (Venice)		2.4GHz	12x	

REVIEW AMD PROCESSOR

AMD
Athlon 64 FX-57DETAILS www.amd.com/athlon64

The Athlon 64 FX-57 is the fastest single-core processor AMD manufactures, with a clock speed of 2.8GHz and 1MB of Level 2 cache. It also has a high price to match: the FX-57 costs an enormous £700, making it the most expensive processor you can buy, with the sole exception of Intel's Pentium D 840 Extreme Edition.

The FX-57 is in direct competition with Intel's Pentium 4 Extreme Edition range. AMD markets the FX-57 as a processor designed for 3D gaming. This makes some sense; as current games cannot yet take advantage of dual-core processors, a faster single-core processor produces the best results at the moment.

The FX-57's 2.8GHz clock speed is even faster than the Athlon 64 X2 4800+, which runs at 2.4GHz. It was outperformed by the dual-core processors in PCMark04 and our video-encoding test, where it scored 5,272 and 125, but it was unbeaten in the image-manipulation benchmark and Far Cry. It scored 139 in our image test and 55.26fps in Far Cry.

Despite the FX-57's already considerable clock speed, we were able to overclock it to 2.94GHz. In this state, it scored 141 in our video-encoding test, though this score was overshadowed by that of the dual-core X2 chips.

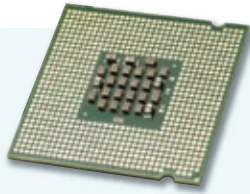
VERDICT

The FX-57 is the fastest processor available for a gaming PC. That said, in most tasks its performance is far beneath the levels you might expect for its price. If you want a processor that's powerful in every task, save £143 and buy the Athlon 64 X2 4800+.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Athlon 64 FX-57	939	2.8GHz	14x	128KB + 1,024KB



REVIEW INTEL PROCESSOR

INTEL
Celeron DDETAILS www.intel.com/products/processor/celeron_d

The Celeron D processor is significantly different from the Celeron range it replaces. Intel's budget processors are based on the same Prescott core as the Pentium 4 range and support the latest SSE3 extensions. Bus speeds have also been increased from 400MHz to 533MHz.

Celerons are available for both Socket 478 and LGA775 motherboards. Some LGA775 models, with product numbers ending in 1 or 6, support the EMT64T 64-bit instruction set. We tested one 32-bit Celeron running at 2.66GHz, and a faster 64-bit Celeron 346 running at 3.06GHz.

Intel processors have locked multipliers, so overclocking is not possible. However, the Celeron D processors performed well straight from the box. Even the £54 Celeron D 330 beat all the AMD Sempron processors in PCMark04. Its score of 86 in our video-encoding test was better than that of all the Semprons and even the Athlon 64 3000+, which costs almost twice as much.

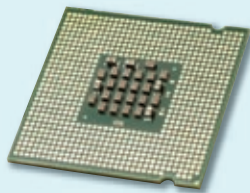
The Celeron D 346's scores of 96 in the *Shopper* application benchmark and 3,947 in PCMark04 were better than those of the Athlon 64 3000+, which is £30 more expensive. It even played Far Cry at 39fps, so is capable of running modern games.

VERDICT

Intel's Celeron D range is a vast improvement over Celeron processors. Both the 330 and 346 outperformed AMD's Sempron chips, and the Celeron D 346 is a worthy rival for the cheaper Athlon 64 processors. The Celeron D 346 is a powerful budget processor that punches well above its £77 price.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Celeron D 330 (Prescott)	LGA775	2.66GHz	20x	16KB + 256KB
Celeron D 346 (Prescott)		3.06GHz	23x	

REVIEW INTEL PROCESSOR

INTEL
Pentium 4 600 SeriesDETAILS www.intel.com/pentium4

The Pentium 4 600 series was Intel's first processor range to support the EM64T instruction set. The 600 series processors also have twice the amount of Level 2 cache included with the 500 series: 2MB instead of 1MB.

We tested processors from the top and bottom ends of the 600 series. The Pentium 4 640 runs at 3.2GHz and the 660 at 3.6GHz, and these are available for £160 and £275 respectively. This makes them only slightly more expensive than their equivalents in the Pentium 4 500 series.

The 640 and 660's extra cache made little difference in PCMark04 and the *Shopper* application benchmarks. The 640 and 660's scores of 4,889 and 5,466 were only just ahead of the Pentium 4 540 and 560, and the 660 performed slightly worse than the 560 in the overall *Shopper* benchmark with a score of 128.

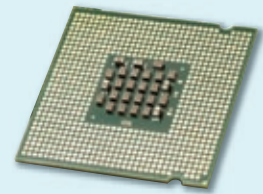
The processors did manage an extra couple of frames in Far Cry, but their performance advantage will only become apparent in applications that take advantage of the 64-bit instruction set.

VERDICT

The Pentium 4 640 and 660 don't perform much better than the standard Pentium 4 540 and 560 processors, but as the price difference is so small it's worth spending the extra money to ensure that your PC is ready for 64-bit applications. If you are upgrading an LGA775 motherboard that doesn't support dual-core processors, the Pentium 4 640 is a good buy.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Pentium 4 640 (Prescott)	LGA775	3.2GHz	16x	16KB + 2,048KB
Pentium 4 660 (Prescott)	LGA775	3.6GHz	18x	16KB + 2,048KB

REVIEW INTEL PROCESSOR

INTEL
Pentium 4 500 SeriesDETAILS www.intel.com/pentium4

One of the main advantages of Intel's Pentium 4 is its Hyper-Threading technology. Processors with Hyper-Threading cope better than single-core chips in background tasks such as virus checking as they can run different processes in separate threads.

Some Pentium 4 processors, with model numbers ending in 1, support Intel's EM64T 64-bit instruction set. We tested the Pentium 4 530, 540, 560 and 570 models, with clock speeds ranging from 3 to 3.8GHz.

When running the standard 32-bit version of Windows XP, Intel's Pentium 4 range outperforms AMD's Athlon 64 processors. The cheapest in the group, the £114 Pentium 4 530, is faster than the £129 Athlon 64 3200+ in every benchmark apart from Far Cry, and the £148 Pentium 4 540 is almost as quick in the *Shopper* benchmarks as the £234 Athlon 64 3800+.

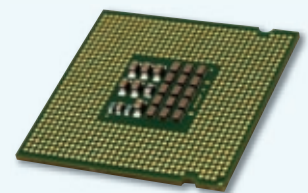
At the top of the range, though, the Pentium 4 560 and 570 face stiff competition from Intel's own Pentium D 820. Unless your motherboard won't accept the dual-core chip, it's a far better buy.

VERDICT

The 3GHz Intel Pentium 4 530 is excellent value. It is powerful enough for high-end tasks and is a more powerful chip than its AMD rivals. The 560 and 570 are overpriced, though. Most users would be better off spending a little more on a Pentium 4 600 series or Pentium D processor.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Pentium 4 530 (Prescott)	LGA775	3GHz	15x	16KB + 1,024KB
Pentium 4 540 (Prescott)	LGA775	3.2GHz	16x	16KB + 1,024KB
Pentium 4 560 (Prescott)	LGA775	3.6GHz	18x	16KB + 1,024KB
Pentium 4 570 (Prescott)	LGA775	3.8GHz	19x	16KB + 1,024KB

REVIEW INTEL PROCESSOR

INTEL
Pentium D 800 Series
and Extreme EditionDETAILS www.intel.com/products/processor/pentium_d and www.intel.com/products/processor/pentiumxe

The Pentium D is Intel's dual-core processor, and competes with AMD's Athlon 64 X2 series. Pentium D chips will fit into many modern LGA775 motherboards, but be sure to check before you buy. Motherboards using the Intel 915 or 925 chipsets, for example, do not support dual-core processors.

The Pentium 840 Extreme Edition also uses Hyper-Threading on both cores, so Windows recognises it as four processors.

The D 820 and 840 Extreme Edition produced impressive results in both PCMark04 and the video encoding section of the *Shopper* benchmarks. The £176 D 820 scored 5,607 in PCMark04, just behind the £413 Pentium 4 570. Its score of 139 overall in our *Shopper* benchmarks was only slightly behind the 142 produced by AMD's £250 Athlon 64 X2 3800+. The Pentium 840 Extreme Edition scored 173 in the *Shopper* benchmark, ahead of AMD's X2 and FX-57. Its score of 241 in our video-encoding test is astonishing.

VERDICT

The 840 Extreme Edition is incredibly fast but it's overshadowed by AMD's Athlon 64 X2 4800+, which is almost as fast and over £200 cheaper. The Pentium D 820, however, performed brilliantly in our benchmarks, but costs just £176. It's the best processor for a powerful desktop system.

TESTED	SOCKET	SPEED	MULTIPLIER	CACHE
Intel Pentium D 820 (Smithfield)	LGA775	2.8GHz	14x	16KB + 1,024KB
Intel Pentium 840 Extreme Edition	LGA775	3.2GHz	16x	16KB + 1,024KB



BENCHMARKS

2D Performance **Shopper application tests**

Video-Encoding Test

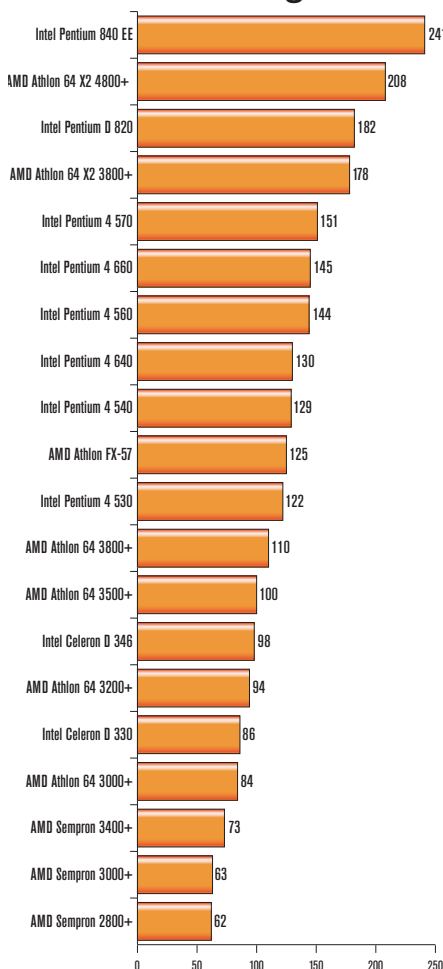
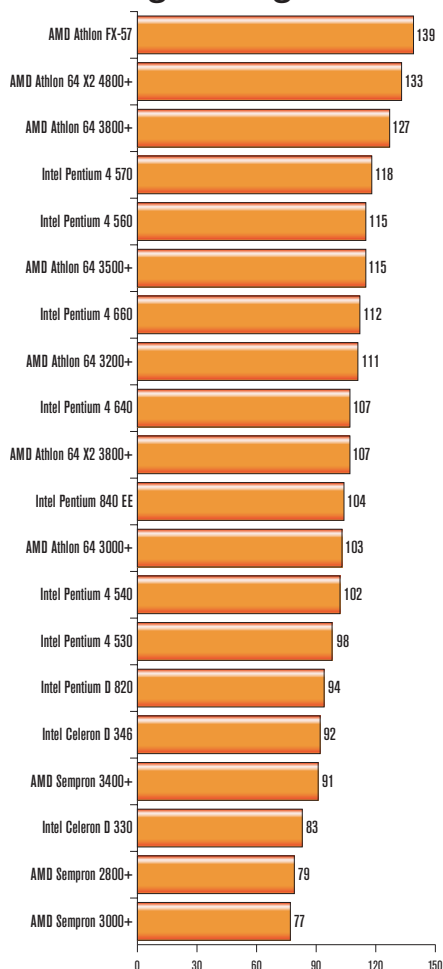
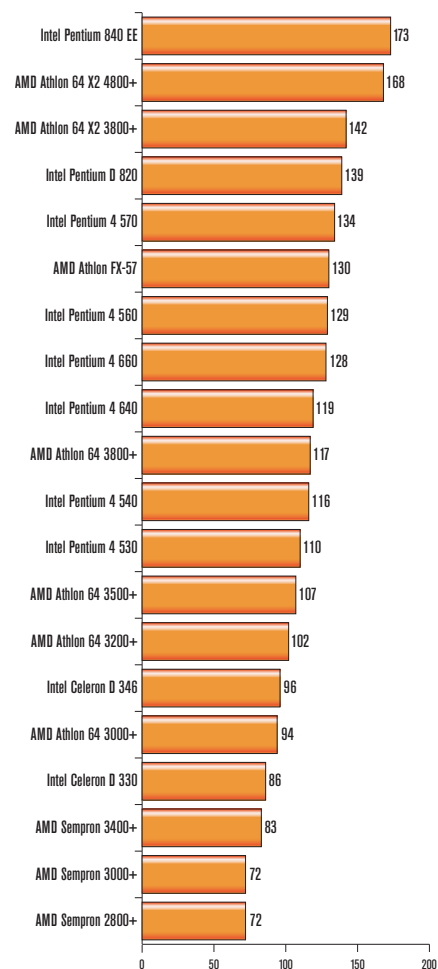


Image-Editing Test



Overall



Computer Shopper's 2D benchmarks are designed to show how PCs stand up to the toughest tasks Windows can throw at them. Today's processors have no problem running office applications such as Word and Excel, so we focus our tests on areas where you could experience difficulties.

Encoding a short video to MPEG2 format is a very processor-intensive task, and one that anyone interested in transferring home videos to DVD will have to tackle. Our image-editing test simulates a session of photo enhancement using Paint Shop Pro, ending in the memory-intensive composition

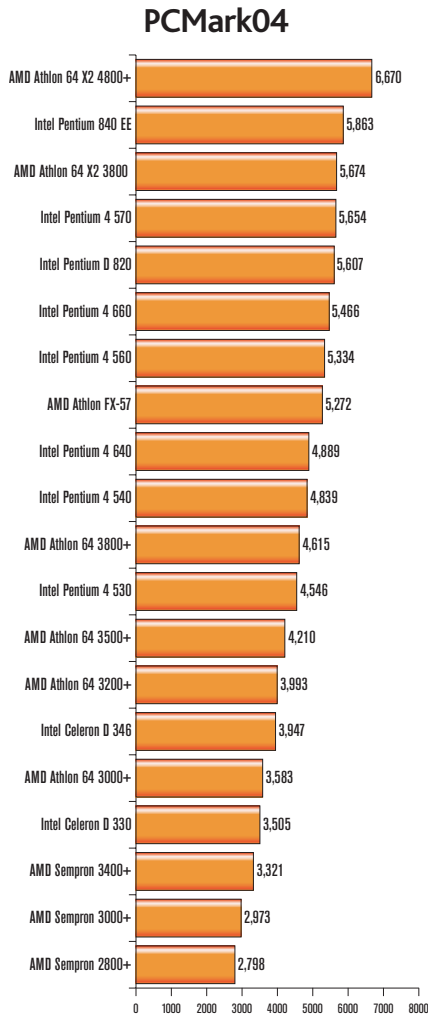
of a panorama from a set of digital snaps. Finally, a set of MP3s is generated by ripping an audio CD.

We compiled the tests with the help of our sister magazine for performance computing, *Custom PC*. Figures are relative to a reference Evesham Athlon 64 3500+ system, which scores 100 in all tests.

PROCESSOR	AMD SEMPRON 2800+	AMD SEMPRON 3000+	AMD SEMPRON 3400+	AMD ATHLON 64 3000+	AMD ATHLON 64 3200+	AMD ATHLON 64 3500+	AMD ATHLON 64 3800+	AMD ATHLON 64 X2 3800+	AMD ATHLON 64 X2 4800+
Core	Palermo	Palermo	Palermo	Venice	Venice	Newcastle	Venice	Manchester	Toledo
Rating	★★★★	★★★★	★★★★★	★★★★★	★★★★★	★★	★★★	★★★★★	★★★★★
Frequency	1.6GHz	1.8GHz	2GHz	1.8GHz	2GHz	2.2GHz	2.4GHz	2GHz	2.4GHz
Socket	754	754	754	939	939	939	939	939	939
Process	90nm	90nm	90nm	90nm	90nm	130nm	90nm	90nm	90nm
Cores	One	One	One	One	One	One	One	Two	Two
Instructions	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, 3DNow!, SSE, SSE2, SSE3, x86-64
Multiplier	8x	9x	10x	9x	10x	11x	12x	10x	12x
External bus	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz
Effective FSB speed	2x 800MHz (HyperTransport)	2x 800MHz (HyperTransport)	2x 800MHz (HyperTransport)	2x 1,000MHz (HyperTransport)	2x 1,000MHz (HyperTransport)	2x 1,000MHz (HyperTransport)	2x 1,000MHz (HyperTransport)	2x 1,000MHz (HyperTransport)	2x 1,000MHz (HyperTransport)
Level 1 cache	128KB	128KB	128KB	128KB	128KB	128KB	128KB	128KB	128KB
Level 2 cache	256KB	128KB	256KB	512KB	512KB	512KB	512KB	512KB	1,024KB
Price including VAT	£51	£62	£95	£107	£129	£180	£234	£250	£557
Supplier	www.dabs.com	www.savastore.com	www.dabs.com	www.dabs.com	www.savastore.com	www.savastore.com	www.dabs.com	www.dabs.com	www.lowestonweb.com
Part code	SDA2800BXBOX	SDA3000AI02BA	SDA3400BXBOX	ADA3000BPBOX	ADA3200BPBOX	ADA3500AWBOX	ADA3800BPBOX	ADA3800BVBOX	ADA4800DAA6CD



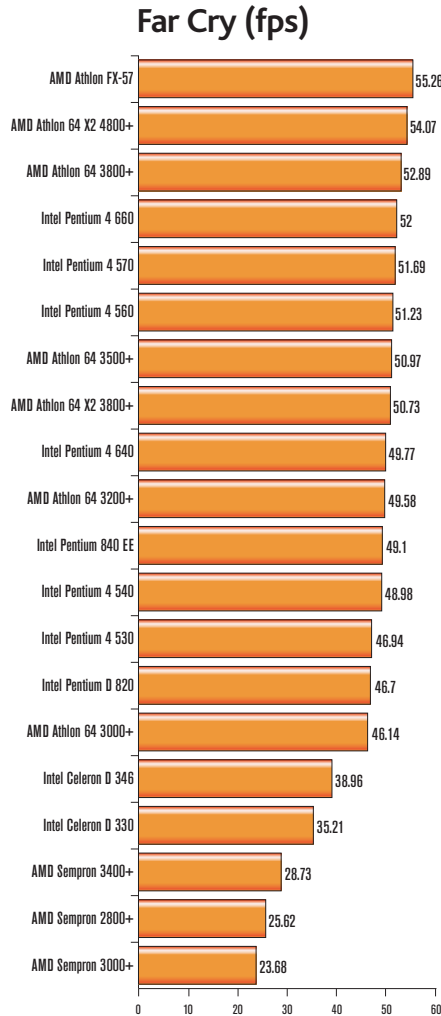
2D PCMark04



SETTINGS 1,024x768
resolution, 32-bit
colour, default settings
WEB
www.futuremark.com

As well as using our own benchmarks we tested all the processors with Futuremark's PCMark04. You can download a free version of this benchmark from www.futuremark.com/download.

3D Far Cry



SETTINGS 1,024x768
resolution, high
quality, 4x AA
WEB
www.doom3.com

We run a timed demo in Doom 3 to test how well a processor can play cutting-edge 3D games. Figures indicate the frame rate (per second) achieved, with scores over 40 being very good.

LABS VERDICT PROCESSORS

In our last Labs test of processors in February 2005, AMD won three awards to Intel's one. This time, the tables have turned, with Intel's Pentiums and Celerons producing great results.

If you're building a new PC on a tight budget, the Celeron D 346 is hard to beat. It performed far better than any of AMD's budget Sempron range, and even beat the lower-end Athlon 64s in certain tests. It wins our Best Budget Buy award.

AMD's Athlon 64 processors are still the best choice for gamers. We were particularly impressed with the £130 Athlon 64 3200+. If you're building a PC for more general use, we'd recommend the Pentium D 820. It provides performance close to that of far more expensive chips. Both win a Best Buy award.

If you're upgrading your existing PC, three processors stand out. AMD's Athlon 64 X2 3800+ is an inexpensive way to add dual-core performance to a Socket 939 PC. If you're upgrading a Socket 775 PC, we'd recommend Intel's Pentium D 820. If your motherboard doesn't support dual-core processors, however, Intel's Pentium 4 640 is a fine alternative. **CS**

AMD

Athlon 64 3200+



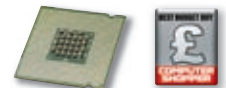
AMD

Athlon 64 X2 3800+



INTEL

Celeron D 346



INTEL

Pentium 4 640



INTEL

Pentium D 820



AMD ATHLON 64 FX-57	INTEL CELERON D 330	INTEL CELERON D 346	INTEL PENTIUM 4 530	INTEL PENTIUM 4 540	INTEL PENTIUM 4 640	INTEL PENTIUM D 820	INTEL PENTIUM 4 560	INTEL PENTIUM 4 660	INTEL PENTIUM 4 570	INTEL PENTIUM 840 EE
San Diego	Prescott	Prescott	Prescott	Prescott	Prescott	Smithfield	Prescott	Prescott	Prescott	Smithfield
★★★	★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★	★★★★	★★★	★★
2.8GHz	2.66GHz	3.06GHz	3GHz	3.2GHz	3.2GHz	2.8GHz	3.6GHz	3.6GHz	3.8GHz	3.2GHz
939	LGA775	LGA775	LGA775	LGA775	LGA775	LGA775	LGA775	LGA775	LGA775	LGA775
90nm	90nm	90nm	90nm	90nm	90nm	90nm	90nm	90nm	90nm	90nm
One	One	One	One	One	One	Two	One	One	One	Two
MMX, 3DNow!, SSE, SSE2, SSE3, x86-64	MMX, SSE, SSE2, SSE3	MMX, SSE, SSE2, SSE3, EM64T	MMX, SSE, SSE2, SSE3	MMX, SSE, SSE2, SSE3	MMX, SSE, SSE2, SSE3, EM64T	MMX, SSE, SSE2, SSE3, EM64T	MMX, SSE, SSE2, SSE3	MMX, SSE, SSE2, SSE3, EM64T	MMX, SSE, SSE2, SSE3	MMX, SSE, SSE2, SSE3, EM64T
14x	20x	23x	15x	16x	16x	14x	18x	18x	19x	16x
200MHz	133MHz	133MHz	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz	200MHz
2x 1,000MHz (HyperTransport)	533MHz	533MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz	800MHz
128KB	16KB	16KB	16KB	16KB	16KB	16KB	16KB	16KB	16KB	16KB
1,024KB	256KB	256KB	1,024KB	1,024KB	2,048KB	1,024KB	1,024KB	2,048KB	1,024KB	1,024KB
£700	£54	£77	£114	£148	£160	£176	£271	£275	£413	£765
www.savastore.com	www.dabs.com	www.dabs.com	www.savastore.com	www.savastore.com	www.dabs.com	www.dabs.com	www.savastore.com	www.dabs.com	www.lowestonweb.com	www.inmac.co.uk
ADAFX57BNBOX	BX80546RE2667C	BX80547RE3066CN	BX80547PG3000E	BX80547PG3200E	BX80547PG3200F	BX80551PG2800FN	BX80547PG3600E	BX80547PG3600F	BX80547PG3800EJ	BX80551PGH3200F